

The Motives for FDI Location in Europe and EU Enlargement

Abstract

European Union (EU) enlargement of the mid-2000s is likely to have changed the motives for foreign direct investment (FDI) location between the existing Member States (the EU15) and the new entrants of Central and Eastern Europe (CEECs), but it is poorly understood. This paper uses the framework of Dunning's eclectic paradigm and data for 35,105 foreign investments in Europe to not only examine if the motives differ between these, but how they are affected by the enlargement. Three asset-exploiting motives of market, resource and efficiency seeking are explored using a conditional logit model for the location choice. This is separately for greenfield and brownfield FDI, involving new facilities or jobs, where the latter is efficiency seeking from an expansion or a co-location of functions. The paper finds greenfield FDI in the CEECs seeks an export-platform for the EU market and a low-skilled workforce, but a national market and higher skills in the EU15. Brownfield FDI differs from this for expansions only, for which the EU market is important, reflecting scale economies. Surprisingly, EU enlargement has a much stronger effect on the FDI location motives in the EU15 by increasing the importance of the European market, which is possibly because the CEEC liberalization was ongoing throughout the accession process. The paper finds evidence that the differences in the motives between the CEECs and EU15 are narrowing over time, but they are pronounced and it is argued they will persist.

Keywords: FDI location; asset-exploiting motives; Europe; EU enlargement; CEECs.

JEL Classification: F150; F210; P330.

Acknowledgements

Earlier versions of this paper were presented in whole or in part at: the Department of Land Economy, Cambridge University, March 2014; European Regional Science Association conference, St Petersburg, August 2014; British and Irish Section of the Regional Science Association, Newquay, August 2016; and HM Treasury, UK, January 2017. Financial support from the Peter and Norah Lomas scholarship is gratefully acknowledged and thanks go to Ernst and Young for supplying the FDI data. We are grateful to David Barlow, Luigi Benfratello, Paul Elhorst, Simona Iammarino and Roxana Radulescu, as well as to anonymous referees of this journal for constructive comments, but the usual disclaimer applies.

The Motives for FDI Location in Europe and EU Enlargement

1. Introduction

Multinational enterprise (MNE) activity from foreign direct investment (FDI) has grown at a faster rate than other international transactions, and leading to renewed interest in its location (Blonigen 2005). In Europe, FDI is driven by integration (see Barba Navaretti and Venables, 2006), of which a key event is the fifth enlargement of the European Union (EU) in the mid-2000s (Brühlhart *et al.*, 2004; Jones *et al.*, 2018). This sought to integrate the ten Central and Eastern European countries (CEECs) into this union, liberalizing their economies (De Smidt, 1992; Disdier and Mayer, 2004) and through lower trade costs changing the relationship with the fifteen existing EU Member States ('EU15').¹ Enlargement is likely to affect the motives for FDI location in the both new and old EU Member States (Krugman and Venables, 1990), but it is relatively poorly understood. Much of the existing evidence is prior to enlargement or for a single country, while the cross-country studies tend to be piecemeal and are either for the CEECs or the EU15 (e.g., Demekes *et al.*, 2007; Pusterla and Resmini, 2007).

The purpose of this paper is to explore differences in the motives for FDI location in the CEECs and EU15 countries, and to examine the roles played by the EU enlargement and greater integration from economic, political and trade liberalization. The framework for this is the eclectic paradigm of Dunning (1988, 2001) that is given effect by the asset-exploiting motives of market, resource and efficiency seeking (Buckley *et al.*, 2007). The first two of these motives are explored for greenfield FDI, which is in the form of new start-ups, and the latter for brownfield FDI at an MNE's existing site in the host country. This is either as an expansion in the plant's primary function or a co-location of different functions at the same

¹ The CEECs are the Eastern Bloc countries west of the former Soviet Union, plus the Baltic States. Slovenia is part of the fifth enlargement and included, but Cyprus and Malta that joined in 2004 are not.

site, where respectively these are efficiency gains from economies of scale and scope (Cui *et al.*, 2014). In the international business literature, brownfield FDI tends to be used for the foreign takeover of domestically-owned plants (Cheng, 2009), but in our case it is associated with new facilities or jobs, possibly as a result of a takeover, which Meyer and Estrin (2001) define as ‘brownfield acquisitions’. Our definition is used by Král (2004), and it corresponds with the planning literature, where a brownfield site is land or buildings that is developed but not in full use (Alker *et al.*, 2010). Importantly, as Dunning (2000) argues, it is sequential to the market and resource motives, so that it is believed to capture efficiency seeking.

The FDI data give details of 35,105 greenfield and brownfield cross-border projects locating in the CEECs and EU15 (the ‘EU25’) over 1997-2010, including periods before and after the fifth EU enlargement. Terms are used to capture the market and resource motive, while data are also collected for enlargement and liberalization, as well as for agglomeration, macroeconomic and industry variables, reflecting the heterodox nature of Dunning’s eclectic paradigm (McCann and Mudambi, 2005). The location choice is analyzed using conditional logit models, by regressing these variables across the EU25 countries for each of greenfield and brownfield FDI. In this latter case, the market and resource terms reveal the location of this efficiency-seeking FDI. The statistical significance of the market and resource motives is examined, which is both from zero and between the CEECs and EU15.

Overall, the results reveal that there are significant differences in the FDI location motives between the CEECs and EU15. Greenfield FDI in the CEECs is consistent with its location as an export-platform for the main European market, but in the EU15 it seeks a large national market size and the higher-quality resources of an educated workforce. Brownfield expansions seek the European market in the CEECs and EU15, but co-locations have similar motives to greenfield FDI. Enlargement has a strong effect on the motives in the EU15 only, making the European market and a less highly-skilled workforce more attractive, whereas the

locations in the CEECs that are further to the east increase in importance. Liberalization was ongoing in the CEECs and this may explain the weaker effect of enlargement. The difference in the motives seems to be narrowing over time, but it is argued that it will persist.

The next section sets out the framework and hypotheses. Sections 3 and 4 outline the model, data and variables, and Section 5 presents the results. Section 6 concludes.

2. Theoretical Framework and the Location Motives

2.1. The Eclectic Paradigm and Literature Review

There is a growing use of the international business literature in economic geography (see Beugelsdijk *et al.*, 2010; Jones, 2018), for which the eclectic paradigm is the most influential framework for examining FDI determinants (Stoian and Filippaios, 2008). According to this, FDI occurs if a firm has ownership, internalization and location advantages (Dunning, 1988, 2001) and it is given effect by the asset-exploiting motives of market, resource and efficiency seeking (Buckley *et al.*, 2007). Market-seeking FDI circumvents trade barriers or it exploits new markets; resource-seeking investment secures a stable or low-cost supply of resources; and efficiency seeking improves a firm's operations (Dunning, 2000). A fourth motive that is known as strategic-asset seeking (see Li *et al.*, 2012) is not explored, since our FDI data are not linked at the MNE level, so that industry linkage terms help control for this.

The empirical analysis is structured around three hypotheses. The first two examine the motives for greenfield and brownfield FDI and the third considers enlargement. All three make a contribution since only a small number of studies include both the CEECs and EU15, but even these may not take a pan-European perspective, including Spies (2010) on German unification and Ascani *et al.* (2016) on Italian FDI in EU candidate countries. Other studies

are prior to the enlargement, such as Disdier and Mayer (2004), who examine the location of French FDI in Europe over 1980-99. They find that agglomeration economies matter for the EU15 and the national market size and distance from the host country for the CEECs, but they do not consider proximity to the EU market.² More broadly, many FDI studies are for a single country, while the piecemeal nature of this literature makes it difficult to compare the importance of the FDI location motives between the CEECs and the EU15, and to know if they are statistically different. Not only do the studies differ in the countries, but in the FDI data, the variables, their measurement, the controls, the time period and estimation technique. All of these condition the results, but importantly they are held constant in our study.

2.2. Hypothesis I: Market and Resource Motives and Greenfield FDI

Eight CEECs acceded to the European Union in 2004, followed by Bulgaria and Romania in 2007, although the integration of these economies with the EU15 had been ongoing since the mid-1990s.³ Association Agreements were signed by each CEEC with the EU that removed tariffs on CEEC industrial goods (Baltagi *et al.*, 2007), and product standards and regulations were phased out over time. The accession negotiations commenced in 1998 and lasted up to seven years (Christoffersen, 2007), with FDI in the CEECs increasing greatly during this time (Resmini, 2000; Jones *et al.*, 2018). The eclectic paradigm argues that the lower tariffs will make a country less attractive to market-seeking FDI, but integration raises the possibility of a third-country effect, since the EU15 has over 90 per cent of EU GDP, and FDI might locate

² Existing research also emphasizes agglomeration economies, for the CEECs (Boudier-Bensebaa, 2005; Hilber and Voicu, 2010) and the EU15, where foreign-owned firms are more important than domestic firms (Basile *et al.*, 2008; Guimarães *et al.*, 2000). Nielsen *et al.* (2017) survey the literature, and market size has a positive effect on FDI in 85 of 115 studies. This is similar for the resource motives of human capital and infrastructure, although ambiguous for wages and taxes that may be due to correlation with unobserved factors. However, the survey includes non-European locations and it does not distinguish between the CEECs and EU15.

³ Negotiations started in 1998 for Estonia, Czech Republic, Hungary, Poland and Slovenia, but about two years later for Latvia, Lithuania, Slovakia, Bulgaria and Romania, of which the first three were able to 'catch-up'.

in the CEECs to take advantage of their good access to this market. The notion of an export-platform is well-established in the international economics literature (Neary, 2008), and it is consistent with the core-periphery new economic geography model (Krugman and Venables, 1990). It suggests that lower congestion and transport costs in the CEECs will be important to facilitate exports, but that the national market size and linkages are less important.

Hypothesis Ia: *Greenfield FDI in the CEECs is an export-platform for the European market that seeks EU25 market access, but national markets are important for the EU15.*

Underlying the export-platform are the resources of the CEECs that are either not available in the EU15 or at such a low cost, like low-skilled labour (see Pusterla and Resmini, 2007). As such, whereas ‘general assets’ in the form of low-skills will be important for FDI location in the CEECs, FDI in the EU15 will be attracted by higher-skills that reflect ‘specific assets’, like technological capabilities, management expertise and organizational abilities (Iammarino and McCann, 2013). However, flexible labour markets that imply less-costly hiring or firing, and lower taxes are likely to be attractive to FDI location throughout the EU25.

Hypothesis Ib: *Greenfield FDI in the CEECs seeks cheap, low-skilled labour, but high-skills in the EU15, while flexible labour markets and lower taxes are important for both.*

2.3. Hypothesis II: The Efficiency-Seeking Motive and Brownfield FDI

Efficiency seeking is explored for brownfield FDI, which is a re-investment at an existing site that is an expansion in the plant’s main function or a co-location of different functions. These give rise to economies of scale or scope (Cui *et al.*, 2014), where in the latter case the MNE takes advantage of ancillary capabilities, such as in technical, computing or transport services (Defever, 2006). Franco *et al.* (2010) argue that efficiency seeking is vague since it includes

activities that are resource seeking, such as the fragmentation of production into ‘global value chains’, but Bevan and Estrin (2004) emphasize the definition that is used here. Its sequential nature means brownfield FDI is consistent with efficiency seeking (Dunning, 2000).

Brownfield FDI is little explored in the literature, although broadly defined, Rascuite and Downward (2017) explore it for EU15 investment in the EU25. They find heterogeneity in FDI location related to the market size and labour availability, but again it is not examined separately for the CEECs and EU15, which could underlie this. Expansions are important in the context of integration since in the CEECs and EU15 they allow an MNE to consolidate its activities to achieve economies of scale (Neary, 2008). This could arise from the closure of an existing facility, possibly outside the EU25, or the location of an investment at an existing rather than a new site, but in either case access to the EU market will be important. Whether it locates in the CEECs or EU15 will depend on the same resources as in Hypothesis Ib.

Hypothesis IIa: *Brownfield FDI from expansions seeks locations with EU25 market access in both the CEECs and EU15, but resource seeking is like greenfield FDI.*

European market access will matter less for co-locations since they improve the operational efficiency of a plant by combining functions. The resource requirement is less certain as this depends on the functions being combined. In the absence of other evidence, the belief is that the location of the co-location projects will be no different to that of greenfield FDI.

Hypothesis IIb: *Brownfield co-locations are driven by the same motives as greenfield FDI.*

2.4. Hypothesis III: EU Enlargement and FDI Location

There is little empirical evidence on how EU enlargement affects the FDI location motives, but as FDI grew strongly in the CEECs after liberalization (Resmini, 2000) then a reasonable

hypothesis is that enlargement will accentuate the importance of the location motives found for greenfield FDI in Hypothesis I, i.e., a given market size leads to more FDI location, and so on. This is consistent with Kosteletou and Liargovas (2000), who find that EU integration increased export-orientated FDI in the CEECs. In the case of the EU15, lower border costs after enlargement could promote the importance of the EU25 market relative to the national market, but for investors that still seek higher-level skills in these countries.

Hypothesis IIIa: *EU enlargement makes the CEECs more attractive to greenfield FDI as an export-platform for the European market, and for cheap, low-skilled labour. In the EU15 the European market is also more important, but for high-skilled labour.*

In addition to the enlargement itself, the liberalization of the CEECs was on-going, since the accession criteria required the CEECs to guarantee democracy and the rule of law before the negotiations could start and to have a functioning market economy in place by membership (Christoffersen, 2007). A key event in this respect was a commitment to enlarge made by the European Council of Ministers up to three years prior to membership, since this reduced the investment risk by ensuring the liberalization of the CEECs (Busse and Hefeker, 2007; Jones *et al.*, 2018). Conversely, political liberalization may have made them less attractive to FDI as investors could prefer less-serious risks, such as a weak regulatory regime (see Bevan and Estrin, 2004). Further, while the eclectic paradigm predicts the removal of the border checks increased trade and makes FDI less attractive, Carstensen and Toubal (2004) find that trade and FDI are in fact complementary in the CEECs prior to the EU enlargement.

Hypothesis IIIb: *Greater economic liberalization increases greenfield FDI in the CEECs, but political and trade liberalization have an uncertain effect and could diminish it.*

3. The Empirical Model

The relationship between the profits π_{ijt} earned on an investment i in country $j \in K = (\text{'EU25'})$ at time t and the location attributes is linearized as: $\pi_{ijt} = \beta X_{ijt} + \varepsilon_{ijt}$, where X_{ijt} are observable attributes and ε_{ijt} is unobserved investor-specific characteristics. This kind of relationship can be derived from a rich base in theory, but for a smaller set of variables (e.g., Head and Mayer, 2004; Basile *et al.*, 2008). While empirically-based, it is reasonable for exploring the market and resource motives since these affect an investor's revenue and costs, and therefore profits. The hypotheses are examined statistically by writing: $\beta X_{ijt} \equiv \beta_M^h M_{ijt} + \beta_R^h R_{ijt} + \beta_I I_{ijt} + \beta_C C_{ijt}$, where M and R are market and resource motives ($h = \text{CEEC and EU15}$), I are integration terms and C are controls. The β parameters are estimated in a single regression for the EU25, which is for greenfield and brownfield FDI for Hypotheses I and II respectively. It is tested if the parameters are different from zero (i.e., $\beta_M^{\text{CEEC}} = 0$, $\beta_M^{\text{EU15}} = 0$, $\beta_R^{\text{CEEC}} = 0$ and $\beta_R^{\text{EU15}} = 0$) and if they differ from each other ($\beta_M^{\text{CEEC}} = \beta_M^{\text{EU15}}$ and $\beta_R^{\text{CEEC}} = \beta_R^{\text{EU15}}$). For Hypothesis III it is also examined if the equalities differ before and after the EU enlargement.

Based on utility maximization, the conditional logit model (CLM) links site selection by a profit-maximizing firm to the location attributes. The location choice is modelled by letting P_{ijt} denote the probability that the foreign investment locates in country j , i.e., $\Pr(\pi_{ijt} > \pi_{ikt})$, where $j \in K$ and for all $k \neq j$. Since $\pi_{ijt} = \beta X_{ijt} + \varepsilon_{ijt}$, then by substitution, $\Pr(\beta(X_{ijt} - X_{ikt}) > \varepsilon_{ijt} - \varepsilon_{ikt})$, and if ε_{ijt} follows a Gumbel distribution, then (McFadden, 1974):

$$P_{ijt} = \frac{\exp \beta X_{ijt}}{\sum_{j \in J} \exp \beta X_{ijt}}. \quad (1)$$

The coefficient β (i.e., β_M^h , β_R^h , β_I and β_C) gives the log-odds ratio of choosing country j over

not choosing j in K . It is estimated by maximizing the log-likelihood function L across the EU25, where d_{ijt} is unity if a project i locates in country j at time t , but zero otherwise:

$$\ln L = \sum_i \sum_j d_{ijt} \ln P_{ijt}. \quad (2)$$

The CLM embodies the Independence of Irrelevant Alternatives (IIA) that imposes a uniform substitutability between each country pair, but it can lead to biased and inconsistent estimates (see Head *et al.*, 1995).⁴ A popular way to address this is a nested logit model (NLM), which estimates the correlation in the error term due to the unobserved characteristics (Basile *et al.*, 2008). Disdier and Mayer (2004) nest the location choice between the CEECs and EU15, but find it diminishes over 1991-99, which they attribute to the liberalization of the CEECs. The NLM is outlined in the Appendix, although in the analysis below we do not reject the IIA.

4. Data and Variables

The FDI data are sourced from the Ernst and Young, *European Investment Monitor* (EIM), which gives details of cross-border investment at the project level. It includes FDI from any source in all EU countries at 2007, excluding Cyprus and Malta.⁵ The EIM gives the location choice of greenfield and brownfield investments that lead to new facilities or gross jobs. It identifies the industry, function, country of origin and scale, although investment expenditure is known only for a third of cases and the number of jobs for two-thirds. To compile the data, Ernst and Young (2012) claim to monitor 20,000 outlets and contact the majority of firms to validate the data. Notwithstanding some definitional differences, the correlation between the

⁴ From equation (1), P_l / P_m depends on the characteristics of countries l and m only, but it is unreasonable if l or m are close substitutes for some third country, since the odds-ratio is affected by its presence.

⁵ It also excludes portfolio investment and license agreements, as well as retail, leisure facilities, hotels, utilities, extraction, real estate and not-for-profit organizations. It includes joint ventures, but mainly in the EU15.

EIM and UNCTAD FDI data is 0.90 by country and year. The number of brownfield cases is similar to Rascuite and Downward (2017), who use the *Bureau van Dijk* FDI data.

The EIM dataset identifies 35,105 FDI projects over 1997-2010, of which a third are brownfield FDI (see Table 1). A half of projects locate in three EU15 countries (8,343 in the UK, 6,022 in France and 3,491 in Germany) and a fifth locate in the CEECs (6,880 projects).⁶ Table 1 shows that 58% of projects are in manufacturing and 30% in services, but excluding personal services, such as education & health, retail & hospitality and transport.⁷ Four-fifths of the brownfield projects are expansions, which is similar for the CEECs and EU15, but they are more likely to be in manufacturing (Table 1). About half the projects originate from the EU15, 34% from the Americas and 12% from Asia. Figure 1 shows that FDI increases in the CEECs after enlargement in 2004, but it is more pronounced for the EU15. Indeed, Figure 2 shows that manufacturing and service FDI have each trended upwards in the EU15.

< TABLE 1 AND FIGURES 1 & 2 ABOUT HERE >

To distinguish expansions from co-locations the EIM identifies ten primary functions of the FDI projects. Overall, 35% of the functions are in production, 35% sales and marketing, 8% headquarters and 7% R&D. These are 29%, 39%, 10% and 8% for the EU15, but 60%, 20%, 1% and 5% for the CEECs. Other functions are service-based, but small in number: logistics (8% EU15; 7% CEECs), contact centres (3%; 2%), testing and servicing (2%; 2%), shared services (1%; 2%), education and training (0.5%; 0.5%) and data centres (0.5%; 0.5%).

⁶ 4,707 projects are in the Visegrád group (Poland, 1,613; Hungary, 1,413; Czech Republic, 1,152 and Slovakia, 529), 654 in the Baltic States (Lithuania, 239; Estonia, 234; and Latvia, 181) and 1,401 in the 2007 entrants.

⁷ It excludes services tied directly to the market, but similar results are found for all services in Table 2 below.

4.1. Market and Resource Variables

The terms for the market (M) and resource (R) motives are chosen to address the hypotheses, and they are motivated by the literature. The discussion of these terms is necessarily concise, but greater detail can be found in Serwicka *et al.* (2014). The measurement of the variables, including the I terms, is given in Appendix Table A, together with the expected signs and the means. Correlation coefficients are presented in Appendix Table B and are reasonable.⁸

In the manner of Harris (1954), market seeking at the European level is captured by a gravity-weighted market potential term, which quantifies the centrality / peripherality of each country location. For country j it is the sum of GDP for all other ($K =$) EU25 countries:

$$\text{Europe market potential}_{jt} = \sum_{k \in K, j \neq k} \frac{GDP_{kt}}{d_{jk} r_k}. \quad (3)$$

Since roads are the popular method for moving goods in the EU it is weighted by the distance d_{jk} between the respective capital cities, using the *AA Route Planner*. To allow for the intra-country distance it is also weighted by the country size r_k (i.e., radius of a disk with the same area). An alternative measure used by Head and Mayer (2004) performs less well.

Market demand at a national level is measured by country real GDP and the forward-looking nature of FDI by the GDP growth rate (see Head and Mayer, 2004; Procher, 2011). As a measure of urbanization the population density indirectly captures market potential, but a negative sign means that the market is congested and exporting is difficult. The motorway density is likely to be correlated with other physical infrastructure, but it is added for the ease of access, for which a positive sign is expected (Keeble *et al.*, 1988). Some studies include per capita income in place of GDP (e.g., Resmini, 2000), but as a market-based explanation it

⁸ The exception is the national market size and wage rate, but other estimates are robust to each of these.

is problematic since it could reflect the productivity of resources. Indeed, it is correlated with both market and resource terms (motorway density: +0.62; wage rate: +0.65). Further, given that the areal size of the country is included in the controls (see below), then it is not possible to include per capita income as it means unscrambling four coefficients from three estimates, while including per capita income on its own gives an implausible negative estimate.⁹

On the resource seeking, high- and semi-skilled labour are proxied by the educational attainment rate of the working-age population at each of the tertiary and secondary levels. A positive estimate for these, especially the former, is consistent with investors seeking specific assets (Iammarino and McCann, 2013). Unskilled labour is the share of the workforce that is educated at neither of these levels, so that its effect is inferred from negative estimates for the two education terms. Production costs are measured by the manufacturing wage rate. There is some ambiguity about the role of the unemployment rate (Basile *et al.*, 2008), but as labour availability is likely to be reflected in a lower wage rate, then like Disdier and Mayer (2004) it is interpreted as capturing a rigid labour market, for which a negative sign is expected. The tax rate is added as it affects the post-tax investment return (Procher, 2011). As the areal size is included it does not capture the benefit of public goods (Bénassy-Quéré *et al.*, 2007).

4.2. Integration and Control Terms

The *I* terms include terms for two integration events. The first is for the EU membership that removed the border checks and lowered trade costs. The second is for the European Council commitment to enlargement that ensured the liberalization of the CEECs under the accession criteria. These are unity for the year of the event and all years afterwards, but zero otherwise.

⁹ Using obvious notation, we regress: $a \ln GDP + b \ln (POP / AREA) + c \ln AREA$, plus other terms, which is: $a \ln GDP + b \ln POP + (c - b) \ln AREA$. Excluding $\ln AREA$, by setting $c = 0$, gives an identical functional form: $\alpha \ln GDP + \beta \ln POP + \gamma \ln AREA$. However, the constraint $\gamma = -\beta (= -b)$ is rejected by the data, suggesting that the b coefficient is biased when the $AREA$ term is omitted, while all other estimates are unchanged as $\alpha = a$.

Since integration is on-going terms are also included for each of economic, political and trade liberalization. The first is captured by the real effective exchange rate. Since its denominator is the consumer price index it picks-up a loss of competitiveness from higher inflation. The second is measured by a composite political risk index that weights twelve indicators, and as serious risks do not vary much it captures less-serious risks.¹⁰ Finally, the trade liberalization from the tariff reductions is picked-up by the volume of trade relative to GDP.

As controls, agglomeration terms from industrial linkages are included for each of the foreign and domestic sectors, where the former is based on the number of FDI projects in the previous period and the latter on employment data (see Appendix Table A). A Jacobs term is added for industrial diversity for the linkages that go across industries (Jones, 2017), as well as a market structure term for the ease of entry into an industry. EU Structural Funds might attract FDI (Basile *et al.*, 2008), but these could just signal that a country is under-developed. The absolute change in the exchange rate is included for market volatility that may deter FDI, and Euro currency membership is added, which like the trade term has an ambiguous effect. FDI varies much more strongly across countries than over time, and this lack of within-group variation makes country-level fixed effects inappropriate, like other studies (e.g., Disdier and Mayer, 2004; Spies, 2010). Finally, as noted above, the areal size term (*AREA*) captures the benefit of a country's pure public goods. Crucially, it also ensures that the population density term is correctly determined, while leaving other estimates unchanged (see note 9).

5. The Results

The model is regressed for $j = 25$ countries and $t = 14$ years from 1997 to 2010. All terms are lagged a year, except for the pre-announced membership and Euro terms. Initially, the NLM

¹⁰ It includes measures for government stability, investment profile, socioeconomic conditions, internal conflict, external conflict, bureaucratic quality, corruption, religious tensions, ethnic tensions, military influence, law and order, and democratic accountability, giving greater weight to the first five of these (Busse and Hefeker, 2007).

was regressed for greenfield FDI, nested according to the EU15 and CEECs, but these results invalidate the utility maximization foundation of the logit model.¹¹ This is also the case if the CEECs are nested by the 2004 and 2007 entrants, implying that Bulgaria and Romania are not close substitutes for each other. A similar result is found for Estonia and the other Baltic States. In both cases, the countries are in different language families, suggesting that cultural differences are important (see Mudambi and Navarra, 2002). After experimentation a nesting structure was found that is consistent with the logit model, but these estimates imply that the errors are uncorrelated.¹² Disdier and Mayer (2004) find a diminishing ‘West-East’ nesting effect prior to enlargement, while it could also be that the large number of variables included in this study capture the differences in FDI location between the CEECs and EU15.

5.1. Hypothesis I: Market and Resource Motives and Greenfield FDI

The results from regressing the CLM for greenfield FDI are presented in Table 2. The first column is for all FDI, and the second and third columns are for manufacturing and services. Many coefficients are significant as the large number of observations means the estimates are better determined with smaller confidence intervals. Two significance tests are presented: the difference from zero (e.g., $\beta_M^{CEEC} = 0$ and $\beta_M^{EU15} = 0$); and in square brackets the difference between the CEECs and EU15 ($\beta_M^{CEEC} = \beta_M^{EU15}$).¹³ Of the other terms, the integration terms are discussed below, but agglomeration, foreign and domestic specialization all increase FDI, and more so in the EU15. Industrial diversity has no effect, but a concentrated market deters

¹¹ The estimates of the dissimilarity parameter were greater than unity at 4.42 and 3.68 for the EU15 and CEECs (standard errors of 0.26 and 0.31), and 4.09, 2.75 and 4.48 for the EU15 and 2004 and 2007 EU entrants.

¹² The nests reflect economic, geographical and language similarities, but dissimilarity parameter estimates are close to unity: France, Germany and UK (estimate of 1.19), Low Countries (0.78), Scandinavia (1.05), Southern Europe (0.89), Visegrád (1.32) and other Slavic (1.69), plus single-country degenerate branches for Austria, Estonia and Romania. If language dummies are included, only the Germanic language family is significant, but it gives perverse results, so that these dummies are not included below.

¹³ The latter involves estimating the terms for the EU25 (e.g., $\beta_M^{CEEC+EU15}$) and by including slope dummies on the terms for the CEECs (i.e., β_M^{CEEC}) to examine if they differ significantly between the CEECs and EU15.

FDI and the areal size has a positive effect. Like these, other terms have expected signs.

< TABLES 2 AND 3 ABOUT HERE >

To interpret the results for the market (M) and resource (R) terms the marginal effects for the probability of FDI location with respect to each term are evaluated in Table 3, where each is expressed as an elasticity. The table also presents the marginal effects for the NLM, but they are similar to the CLM, which is expected given the above. The elasticities are based on the results shown in Table 2, but qualitatively similar estimates are found for the parsimonious version. The M and R estimates are now considered in relation to Hypothesis I.

Hypothesis Ia: *The results in Tables 2 and 3 do not reject this hypothesis.* They show that FDI in the CEECs is an export-platform for the EU25 as the European market potential elasticity is significant and greater than two. Other estimates support this, as the population density and motorway terms reveal that the investors seek an uncongested location with good access, consistent with exporting. Further, the European market potential is significantly less important for FDI location in the EU15 as the elasticity is a third of that for the CEECs, while the population density is insignificant and the national market size is positive and significant. Similar results are obtained for manufacturing FDI, except only the European market matters. The market motives are insignificant for service FDI in the CEECs, but these are essentially producer services, while the importance of the national market for service FDI in the EU15 is likely to reflect its more-localized nature and it is found by Jones and Wren (2016).

Hypothesis Ib: *The results in Tables 2 and 3 do not reject this hypothesis.* The wage rate exerts a negative and significant effect on greenfield FDI in the CEECs, as do both of the education terms, implying a preference for low-skilled labour. In the EU15, both education terms are positive and they differ significantly from the CEECs, such that resource seeking in

the EU15 is about skilled labour. Indeed, the elasticity for tertiary education is nearly three-times greater than that of secondary education in the EU15. Nevertheless, costs still matter as lower wages are important in the EU15, while as expected a lower corporate tax rate and less-rigid labour market are significant for both the CEECs and EU15. Similar results are found for manufacturing FDI, for which the linkages with domestic firms are weaker in the CEECs, further supporting the export-platform hypothesis. For service FDI, Table 2 shows domestic linkages are more important, consistent with producer services, while the positive wage effect could be a substitution effect since it is measured for the manufacturing industry only.

It is not practical to regress the data to allow for the characteristics of the FDI using a multi-nominal logit model since there are a large number of countries and a space constraint prevents us from setting out the new model. However, Appendix Table C estimates the CLM for manufacturing FDI from the EU25 only and it finds similar results. This is also the case if the southern EU or three large EU15 recipients of FDI are not included as hosts.

5.2. Hypothesis II: The Efficiency-Seeking Motive and Brownfield FDI

Brownfield FDI location is conditional on the location of a MNE's existing plants, but since these investments could alternatively be carried out as greenfield FDI, the model is regressed across all EU25 countries. Any resulting bias is likely to be small since it is regressed across a large number of location choices. Table 4 gives the results from jointly regressing the CLM for the expansions and co-locations, allowing the estimates of the market (M) and resource (R) terms to differ between the CEECs and EU15. The elasticities are again given in Table 3. With the exception of the accession terms, the I and C estimates are qualitatively the same as Table 2 and so not reported. A similar pattern is found for production in Appendix Table D, but if the other functions are considered then the estimates are largely insignificant.

< TABLE 4 ABOUT HERE >

Hypothesis IIa: *The results for expansions support the hypothesis for the market motive only.*

European market potential has a positive effect on the location of expansion projects that is not significantly different between the CEECs and EU15. In either case the elasticity of two is greater than that for the national market, and good motorway access and a lower population density also matter for both, especially the CEECs. The importance of the European market is consistent with the significant EU membership term, reflecting lower border costs. While not tested directly, the quality of the resource requirement is lower than that found in Table 3 for greenfield FDI since a less-educated workforce has a larger effect on FDI location in the CEECs, and a more-educated workforce has a smaller effect for the EU15.

Hypothesis IIb: *The results for co-locations support the hypothesis for the EU15 only.*

The co-location estimates are similar to greenfield FDI, except that the national market and higher-skilled labour are even more important for FDI location in the EU15 (Table 3), while in the CEECs the motive terms are generally insignificant. This could arise from the smaller number of observations on the co-locations (Table 1), while there is greater heterogeneity, as there are ninety possible combinations of the functions, compared with ten for the expansions that are in the same function. Similar results are found for co-locations involving production (Appendix Table D). The commitment to enlarge term in Table 4 indicates that liberalization rather than the lower border costs are important for the co-location investments.

5.3. Hypothesis III: EU Enlargement and FDI Location

The European Council commitment to enlarge term is significant in Table 2, so that this is interacted with the market and resource terms to explore the effect of EU enlargement. Since

there is no single date for this event then the year 2004 is used for the EU15. The results for greenfield FDI are given in Table 5. These are qualitatively the same if instead the location motive terms are interacted with EU membership or if 2002 is used for the EU15. The other liberalization terms are estimated for the period as a whole, since these are ongoing.

< TABLE 5 ABOUT HERE >

Hypothesis IIIa: *This hypothesis is refuted for the CEECs, but not for the EU15.* The results in Table 5 show that just three of the ten motive terms differ at the five per cent significance level for the CEECs after enlargement, but every motive differs for the EU15, which is nearly always at the one per cent level.¹⁴ In the CEECs, European market potential is less important for FDI location after enlargement and significantly so for manufacturing (Appendix Table D). Unskilled labour is also less important, as captured by the less negative education terms, while there is a strong negative estimate on the wage rate. These estimates are explained by investors in the CEECs trading market access after enlargement for low-cost locations further to the east.¹⁵ In the EU15, the structural break in the location motives is consistent with the strong upward trend in greenfield FDI from 2004 in Figure 1, which is more pronounced than for the CEECs. It does not reflect the service FDI growth shown in Figure 2, since it is found for manufacturing FDI in Appendix Table D.¹⁶ In contrast to the CEECs, it is locations in the EU15 that have good European market access that are more important after enlargement, and the quality of labour is also more important, particularly skilled labour.

Hypothesis IIIb: *This hypothesis is not refuted by the results.* Economic liberalization increases the probability of location in the EU25, but Table 5 shows that political and trade

¹⁴ The likelihood ratio test for a break in all ten terms is 274.2; $\chi^2_{0.01, 10} = 23.2$.

¹⁵ Outside the Visegrád countries close to the main EU15 border, the number of FDI projects virtually doubled in the CEECs after EU enlargement up to 2010, but by just five per cent in the Visegrád.

¹⁶ In the case of service FDI, nearly every motive term differs significantly after enlargement for the EU15, but there are few significant changes in these for the CEECs, the education terms being an exception.

liberalization reduce FDI in the CEECs. As noted above, it is consistent with other studies and reflects the less-developed nature of these economies. The magnitude of the coefficient estimates for economic and political liberalization are much greater for the CEECs, and this may explain why the EU enlargement has a weaker effect for these countries.

6. Conclusions

This paper makes several contributions, since not only does it offer systematic evidence on the role of the motives for FDI location derived from Dunning's eclectic paradigm, by testing differences in these between the CEECs and EU15, but it explores how these motives change after the major EU enlargement event of the mid-2000s that integrated the CEECs. There is a substantial literature on FDI location, but this has developed piecemeal, so that there are few studies including both the CEECs and EU15. Further, much of this evidence is in the run-up to the accession, so that the effects of EU enlargement are relatively poorly understood.

The current paper finds there are statistically significant differences in the motives. In particular, greenfield FDI in the CEECs is an export-platform for the European market that seeks an uncongested location, good access and low-skilled labour, whereas in the EU15 the national market and high-skilled labour are significantly more important. These differences exist for manufacturing, and they are apparent even if the southern or major European states are excluded as hosts, but less clear-cut for services. Brownfield FDI locates differently in the case of an expansion of a plant's primary function only, for which the European market is important throughout the EU25. This is efficiency seeking from economies of scale.

As regards EU enlargement, the paper finds the surprising result that it substantially affects the FDI location motives in the EU15, but relatively little affects them in the CEECs. This could arise since the economic liberalization of the CEECs was on-going, both during

the 1990s and through the protracted accession process, although like some other studies we find that political and trade liberalization actually have a negative effect on FDI location in the CEECs, which differs from the EU15. Notwithstanding this, we are unable to confirm the finding of Disdier and Mayer (2004) that the location choice is nested between the CEECs and EU15, possibly because we include a large number of explanatory variables, so that the unobserved effects are small. Disdier and Mayer argue that the liberalization of the CEECs weakens the nesting effect, and this may be a further factor over our study period.

Finally, the differences in the FDI location motives found in this paper are ultimately likely to reflect the underlying disparities in economic development between the CEECs and EU15. Of course, FDI is a key driver of development, but given these disparities the motives may not be readily amenable to policy intervention. Nevertheless, it is the case that the FDI motives should not be treated as homogeneous between the new and existing Member States. While we find evidence that there is some narrowing in the FDI motives between these after enlargement (i.e., the European market matters more in the EU15 but less so in the CEECs, with FDI locating further eastwards), it is the case that they remain pronounced. Since they reflect the disparities in economic development then they are also likely to persist.

Table 1: Project Characteristics by Mode

Characteristics:	All FDI	Greenfield	Brownfield	Expansions	Co-locations
All projects	35,105	23,325	11,780	9,422	2,358
EU15 host	28,225 (80.4%)	18,626 (79.9%)	9,599 (81.5%)	7,834 (83.1%)	1,765 (74.9%)
CEEC host	6,880 (19.6%)	4,699 (20.1%)	2,181 (18.5%)	1,588 (16.9%)	593 (25.1%)
Manufacturing	20,351 (57.9%)	11,019 (47.2%)	9,332 (79.2%)	7,480 (79.4%)	1,852 (78.5%)
Services	10,497 (29.9%)	8,890 (38.1%)	1,607 (13.6%)	1,301 (13.8%)	306 (13.0%)
EU15 origin	15,823 (45.1%)	10,204 (43.7%)	5,619 (47.7%)	4,547 (48.3%)	1,072 (45.5%)
CEEC origin	415 (1.2%)	363 (1.6%)	52 (0.4%)	37 (0.4%)	15 (0.6%)

Notes: Number of projects over 1997-2010. Services exclude education & health, retail & hospitality and transport. Origin excludes joint ventures that are in part from outside the EU15 and CEEC respectively.

Table 2: Results for the Greenfield FDI Location Choice

Dependent variable: Location choice of greenfield FDI projects						
Sector:	All		Manufacturing		Services	
EU25 host countries:	CEECs	EU15	CEECs	EU15	CEECs	EU15
<u>Market seeking (M):</u>						
Europe market potential	2.669*** [***]	0.864***	3.458*** [***]	1.045***	0.396 [-]	0.827***
National market size	-0.135 [***]	0.497***	-0.008 [-]	-0.136	0.171 [**]	1.219***
GDP growth rate	0.021*** [-]	0.012	0.033*** [**]	0.002	0.028** [-]	0.029**
Population density	-1.184*** [***]	0.107	-1.858*** [***]	0.668**	-0.249 [-]	-0.462
Motorway density	0.493*** [***]	0.073***	0.647*** [***]	0.081*	0.189 [-]	-0.014
<u>Resource seeking (R):</u>						
Tertiary education	-0.044*** [***]	0.041***	-0.054*** [***]	0.038***	0.017 [-]	0.046***
Secondary education	-0.021** [***]	0.007***	-0.025** [**]	0.007**	0.023 [-]	0.003
Wage rate	-0.524** [-]	-0.925***	-0.555** [-]	-0.618**	0.942* [***]	-1.137***
Labour market rigidity	-0.040*** [-]	-0.044***	-0.040*** [*]	-0.064***	-0.048*** [***]	-0.026**
Corporate tax rate	-0.034*** [**]	-0.025***	-0.044*** [**]	-0.032***	-0.026*** [-]	-0.025***
<u>Integration terms (I):</u>						
EU membership	0.043	-	0.045	-	0.205	-
Commitment to enlarge	0.405***	-	0.242**	-	0.347*	-
Economic liberalization	0.020*** [***]	0.011***	0.024*** [***]	0.013***	-0.006 [-]	0.013***
Political liberalization	-0.034*** [***]	0.012***	-0.033*** [***]	0.009**	-0.042*** [***]	0.019***
Trade liberalization	-0.003 [***]	0.007***	-0.005* [***]	0.007***	-0.001 [-]	0.006***
<u>Controls (C):</u>						
Market volatility	0.005 [***]	-0.013***	0.003 [*]	-0.011*	0.006 [-]	-0.004
Single currency	0.206* [***]	-0.368***	0.421*** [***]	-0.320***	-0.097 [-]	-0.481***
Foreign specialization	0.010*** [***]	0.089***	0.097*** [-]	0.096***	0.161*** [***]	0.052***
Domestic specialization	0.103*** [***]	0.178***	0.017 [***]	0.132***	0.472*** [***]	0.156***
Industrial diversity	-0.006 [-]	0.014	0.023 [-]	0.023	-0.024 [-]	0.048**
Market structure	-0.996*** [-]	-0.950***	-0.900*** [-]	-0.771***	0.322** [***]	-0.689***
Structural Funds	-0.058*** [***]	0.150***	-0.067*** [***]	0.199***	-0.056** [***]	0.137***
Areal size	1.440*** [***]	0.434***	1.587*** [**]	1.058***	0.951 [-]	-0.205***
CEEC constant term	2.456	-	3.815	-	-1.278	-
Log-likelihood	-60,668.2		-29,411.9		-21,507.9	
Wald statistic	24,424.8***		9,538.3***		12,124.0***	
N observations (i projects)	583,125 (23,325)		275,475 (11,019)		222,250 (8,890)	

Notes: CLM regression of equation (2) with (1). Variables defined in Appendix Table A. Services exclude education & health, retail & hospitality and transport. *** = 1%; ** = 5% and * = 10% significance level. [***], [**] and [*] = significant between EU15 and CEECs, where [-] = no difference.

Table 3: Marginal Probability Effects

Investment mode:	Greenfield FDI				Brownfield FDI			
Model / Type:	CLM		NLM		Expansions		Co-locations	
EU25 host countries:	CEECs	EU15	CEECs	EU15	CEECs	EU15	CEECs	EU15
<u>Market seeking (M):</u>								
Europe market potential	2.56	0.83	2.43	0.57	2.83	2.14	-	0.60
National market size	-	0.48	-	0.52	0.77	1.03	-	1.30
GDP growth rate	0.06	-	0.08	0.07	-	0.09	0.11	-
Population density	-1.14	-	-1.64	-	-2.70	-0.58	-	-1.01
Motorway density	0.47	0.07	0.57	0.21	0.73	0.13	-	0.23
<u>Resource seeking (R):</u>								
Tertiary education	-0.99	0.92	-1.49	0.78	-1.93	0.40	-	1.18
Secondary education	-1.02	0.34	-1.44	-	-3.54	-0.39	-	1.25
Wage rate	-0.50	-0.89	-0.78	-0.33	-	-1.48	2.09	-1.15
Labour market rigidity	-0.32	-0.35	-0.52	-0.49	-	-	-	-
Corporate tax rate	-0.93	-0.68	-0.87	-0.75	-0.83	-0.75	-1.16	-0.89

Notes: Marginal probability of FDI location expressed as an elasticity, $(\partial P_i / P_i) / (\partial x_i / x_i)$, which is $(1 - P_i) \beta$ if x_i is logged, but $(1 - P_i) \beta x_i$ otherwise. Evaluated at means, where ‘-’ is insignificant. CLM and NLM with nine nests (see note 12) for all greenfield FDI in Table 2 and brownfield FDI in Table 4.

Table 4: Result for the Brownfield FDI Location Choice

Dependent variable: Location choice of brownfield FDI projects				
Efficiency motive:	Expansion		Co-location	
EU25 host countries:	CEECs	EU15	CEECs	EU15
<u>Market seeking (M):</u>				
Europe market potential	2.948*** [-]	2.227***	-0.174 [***]	0.622***
National market size	0.803*** [-]	1.075***	0.633 [-]	1.358**
GDP growth rate	-0.007 [***]	0.033**	0.040* [*]	-0.017
Population density	-2.809*** [***]	-0.601**	-0.685 [-]	-1.052**
Motorway density	0.756*** [***]	0.135***	0.169 [-]	0.244***
<u>Resource seeking (R):</u>				
Tertiary education	-0.087*** [***]	0.018***	0.008 [-]	0.053***
Secondary education	-0.073*** [***]	-0.007*	0.010 [-]	0.026***
Wage rate	0.159 [***]	-1.545***	2.179*** [***]	-1.194**
Labour market rigidity	-0.018 [*]	0.015	0.015 [-]	0.004
Corporate tax rate	-0.030*** [-]	-0.027*	-0.040*** [***]	-0.032***
<u>Integration terms (I):</u>				
EU membership	0.413***	-	0.237	-
Commitment to enlarge	0.056	-	1.042***	-
Log-likelihood	-28,496.8			
Wald statistic	14,116***			
N observations (i projects)	294,500 (11,780)			

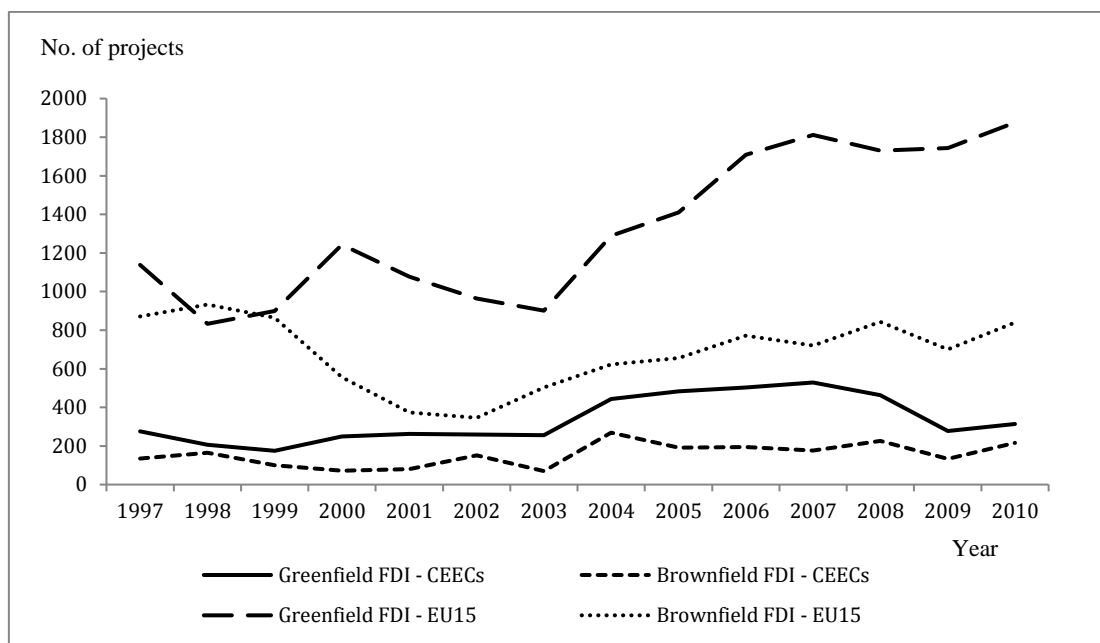
Notes: CLM regression of (2) with (1). *** = 1%; ** = 5% and * = 10% significance level; [***], [**] and [*] = between CEECs and EU15 for each of expansions and co-locations; [-] = no statistical difference. Other terms in Table 2 included but not shown.

Table 5: Result for EU Enlargement

Dependent variable: Location choice of greenfield FDI projects				
Sector:	All			
EU25 host countries:	CEECs		EU15	
Sub-period:	Pre-EU	Post-EU	Pre-EU	Post-EU
<u>Market seeking (M):</u>				
Europe market potential	3.648***	2.448*** [-]	0.785***	0.966*** [**]
National market size	-0.285	-0.750*** [**]	0.562***	0.414* [***]
GDP growth rate	0.025*	-0.003 []	0.071***	-0.036*** [***]
Population density	-2.210***	-0.440 [**]	0.021	0.149 [***]
Motorway density	0.632***	0.533*** [-]	0.024	0.310*** [***]
<u>Resource seeking (R):</u>				
Tertiary education	-0.075***	-0.042** [-]	0.028***	0.051*** [***]
Secondary education	-0.054***	-0.014 []	-0.002	0.014*** [***]
Wage rate	0.628	-0.746** [***]	-0.041	-0.755*** [***]
Labour market rigidity	-0.066***	-0.060*** [-]	-0.080***	-0.001 [***]
Corporate tax rate	-0.031***	-0.016** [-]	-0.015***	-0.059*** [***]
<u>Integration terms (I):</u>				
EU membership		-0.057		-
Commitment to enlarge		0.015		-
Economic liberalization		0.018*** [***]		0.010***
Political liberalization		-0.030*** [***]		0.012***
Trade liberalization		-0.005** [**]		0.004***
Year 2004 onwards		-		-0.787*
Log-likelihood	-60,531.1			
Wald statistic	24,430***			
N observations (i projects)	583,125 (23,325)			

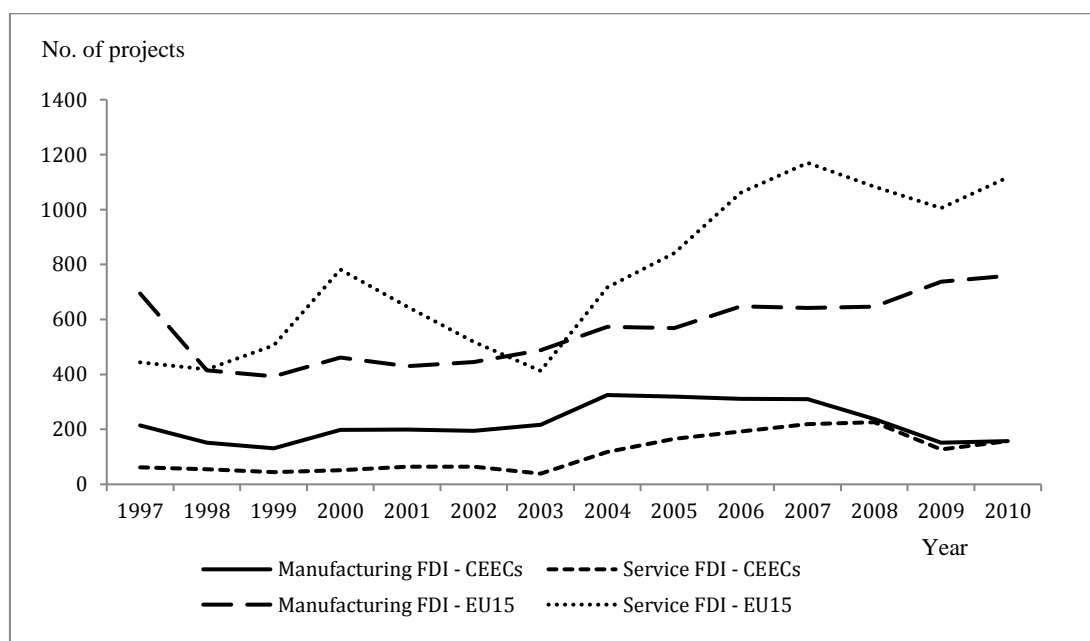
Notes: CLM regression of (2) with (1). *** = 1%; ** = 5% and * = 10% significance level; [***], [**] and [*] = between 'Pre-EU' and 'Post-EU', where commitment to enlarge for CEECs and 2004 for EU15; [-] = no statistical difference. Controls included, but not shown.

Figure 1: FDI in the EU15 and CEECs by Mode over Time



Source: EIM dataset.

Figure 2: Greenfield FDI by Sector over Time



Source: EIM dataset.

Note: Services exclude education & health, retail & hospitality and transport.

References

- Alker, S., Joy, V., Roberts, P. and Smith, N. (2010), 'The Definition of Brownfield', *Journal of Environmental Planning and Management*, 53, 49-69.
- Ascani, A., Crescenzi, R. and Iammarino, S. (2012), *New Economic Geography and Economic Integration: A Review*, SEARCH Working Paper No. WP1/02, European Commission, Brussels.
- Ascani, A., Crescenzi, R. and Iammarino, S. (2016), 'What Drives European Multinationals to the EU Neighbouring Countries? A Mixed Methods Analysis of Italian Investment Strategies', *Environment and Planning B*, 34.4, 581-91.
- Baltagi, B.H., Egger, P. and Pfaffermayr, M. (2007), 'Estimating Models of Complex FDI: Are There Third Country Effects?', *Journal of Econometrics*, 140.1, 260-81.
- Barba Navaretti, G. and Venables, A. J. (2006), *Multinational Firms in the World Economy*, Princeton University Press.
- Basile, R., Castellani, D. and Zanfei, A. (2008), 'Location Choices of Multinational Firms in Europe: The Role of EU Cohesion Policy', *Journal of International Economics*, 74.2, 328-40.
- Belderbos, R., Van Roy, V., Leten, B. and Thijs, B. (2014), 'Academic Research Strengths and Multinational Firms' Foreign R&D Location Decisions: Evidence from R&D Investments in European Regions', *Environment and Planning A*, 920-42.
- Bénassy-Quéré, A., Goyalraja, N. and Trannoy, A. (2007), 'Tax and Public Input Competition', *Economic Policy*, 22, 385-430, April.
- Beugelsdijk, S., McCann, P. and Mudambi, R. (2010), 'Introduction: Place, Space and Organization – Economic Geography and the Multinational Enterprise', *Journal of Economic Geography*, 10, 485-93.
- Bevan, A. and Estrin, S. (2004), 'The Determinants of Foreign Direct Investment into

- European Transition Economies', *Journal of Comparative Economics*, 32.4, 775-87.
- Bevan, A., Estrin, S. and Meyer, K. (2004), 'Foreign Investment Location and Institutional Development in Transition Economies', *International Business Review*, 13.1, 43-64.
- Blonigen, B.A. (2005), 'A Review of the Empirical Literature on FDI Determinants', *Atlantic Economic Journal*, 33, 383-403.
- Boudier-Besebaa, F. (2005), 'Agglomeration Economies and Location Choice', *Economics of Transition*, 13.4, 605-28.
- Brühlhart, M., Crozet, M., and Koenig, P. (2004), 'Enlargement and the EU Periphery: The Impact of Changing Market Potential' *World Economy*, 27.6, 853-75.
- Buckley, P.J., Clegg, J., Cross, A.R., Liu, X., Voss, H. and Zheng, P. (2007), 'The Determinants of Chinese Outward Foreign Direct Investment', *Journal of International Business Studies*, 38.4, 499-518.
- Busse, M. and Hefeker, C. (2007), 'Political Risk, Institutions and Foreign Direct Investment', *European Journal of Political Economy*, 23, 397-415.
- Carstensen, K. and Toubal, F. (2004), 'Foreign Direct Investment in Central and Eastern European Countries: A Dynamic Panel Analysis', *Journal of Comparative Economics*, 32.1, 3-22.
- Cheng, Y-M. (2009), 'Determinants of FDI Mode Choice: Acquisition, Brownfield, and Greenfield Entry in Foreign Markets', *Canadian Journal of Administrative Sciences*, 23.3, 202-20.
- Chidlow, A., Salciuvienė, L. and Young, S. (2009), 'Regional Determinants of Inward FDI Distribution in Poland', *International Business Review*, 18, 119-33.
- Christoffersen, P. S. (2007), 'Organization of the Fifth Enlargement' in G. Vassiliou (ed.), *The Accession Story*, Oxford University Press, New York.
- Cui, L., Meyer, K. E. and Hu, H. W. (2014), 'What Drives Firms' Intent to Seek Strategic

- Assets by Foreign Direct Investment? A Study of Emerging Economy Firms', *Journal of World Business*, 49, 488-501.
- De Smidt, M. (1992), 'International Investments and the European Challenge', *Environment and Planning A*, 83-94.
- Defever, F. (2006), 'Functional Fragmentation and the Location of Multinational Firms in the Enlarged Europe', *Regional Science and Urban Economics*, 36, 658-77.
- Demekes, D.G., Horváth, B. and Ribakova, E. (2007), 'Foreign Direct Investment in European Transition Economies: The Role of Policies', *Journal of Comparative Economics*, 35, 369-86.
- Disdier, A-C. and Mayer, T. (2004) 'How Different is Eastern Europe? Structure and Determinants of Location Choices by French Firms in Eastern and Western Europe', *Journal of Comparative Economics*, 32.2, 280-96.
- Dunning, J.H. (1988), *Explaining International Production*, George Allen and Unwin, London.
- Dunning, J.H. (2000), 'The Eclectic Paradigm as an Envelope for Economic and Business Theories of MNE Activity', *International Business Review*, 9, 163-90.
- Dunning, J.H. (2001), 'The Eclectic (OLI) Paradigm of International Production: Past, Present and Future', *International Journal of the Economics of Business*, 8.2, 173-90.
- Ernst and Young (2012), *European Investment Monitor*, Ernst and Young, London.
- Franco, C., Rentocchini, F. and Marzetti, G. V. (2010), 'Why Do Firms Invest Abroad? An Analysis of the Motives Underlying Foreign Direct Investments', *The Icfai University Journal of International Business Law*, 9.1-2, 42-65.
- Guimarães, P, Figueiredo, O. and Woodward, D., (2000), 'Agglomeration and the Location of Foreign Direct Investment in Portugal', *Journal of Urban Economics*, 47.1, 115-35.
- Harris, C. D. (1954), 'The Market as a Factor in the Localization of Industry in the United States', *Annals of the Association of American Geographers*, 44.4, 315-48.

- Head, K. and Mayer, T. (2004), 'Market Potential and the Location of Japanese Investment in the European Union', *The Review of Economics and Statistics*, 86.4, 959-72.
- Head, K., Ries, J. and Swenson, D. (1995) 'Agglomeration Benefits and Location Choice: Evidence from Japanese Manufacturing Investments in the United States', *Journal of International Economics*, 38.3, 223-47.
- Herriges J. and Kling C. (1996), 'Testing the Consistency of Nested Logit Models with Utility Maximization', *Economics Letters*, 50.1, 33-9.
- Hilber, C.A.L. and Voicu, I. (2010), 'Agglomeration Economies and the Location of Foreign Direct Investment: Empirical Evidence from Romania', *Regional Studies*, 44, 355-71.
- Iammarino, S. and McCann, P. (2013), *Multinationals and Economic Geography: Location, Technology and Innovation*, Edward Elgar, Cheltenham.
- Jones, A. (2018), 'Geographies of Production III: Economic Geographies of Management and International Business', *Progress in Human Geography*, 42.2, 275-85.
- Jones, J. (2017), 'Agglomeration Economies and the Location of Foreign Direct Investment: A Meta-Analysis', *Journal of Regional Science*, 57.5, 731-57.
- Jones, J. and Wren, C. (2016), *Understanding the Location of Foreign Direct Investment, Palgrave Advances in Regional and Urban Economics*, Palgrave Advances in Regional and Urban Economics Series, Macmillan, London.
- Jones, J., Serwicka, I. and Wren, C. (2018), *Economic Integration, Border Costs and FDI Location: Evidence from the Fifth European Union Enlargement*, *International Review of Economics and Finance*, 54, 193-205.
- Keeble, D., Offord, J., and Walker, S. (1988), *Peripheral Regions in a Community of Twelve Member States*, Official Publications of the European Communities, Luxembourg.
- Kosteletou, N. and Liargovas, P. (2000), 'Foreign Direct Investment and Real Exchange Rate Inter-Linkages', *Open Economies Review*, 11.2, 135-48.

- Král, (2004), 'Identification and Measurement of Relationships Concerning Inflow of FDI: The Case of the Czech Republic', *Working Paper 2004/5*, Czech National Bank, Prague.
- Krugman, P. and Venables, A. J. (1990), 'Integration and the Competitiveness of Peripheral Industry', in C. Bliss and J. Braga De Macedo (eds), *Unity with Diversity in the European Economy: The Community's Southern Frontier*, Cambridge University Press.
- Li, J., Li, Y. and Shapiro, D. (2012), 'Knowledge Seeking and Outward FDI of Emerging Market Firms: The Moderating Effects of Inward FDI', *Global Strategy Journal*, 277-95.
- McCann, P. and Mudambi, R. (2005), 'Analytical Differences in the Economics of Geography: The Case of Multinational Firms', *Environment and Planning A*, 1857-76.
- McFadden, D. L. (1974) 'Conditional Logit Analysis of Qualitative Choice Behavior', in P. Zarembka (ed.) *Frontiers in Econometrics*, Academic Press, New York.
- Meyer, K. E. and Estrin, S. (2001), 'Brownfield Entry in Emerging Markets', *Journal of International Business Studies*, 32.3, 575-84.
- Mudambi, R. and Navarra, P. (2002), 'Institutions and International Business: A Theoretical Overview', *International Business Review*, 11, 635-46.
- Neary, J. P. (2008), 'Trade Costs and Foreign Direct Investment', in S. Brakman and H. Garretsen (eds), *Foreign Direct Investment and the Multinational Enterprise*, MIT Press.
- Nielsen, B. B., Asmussen, C. G. and Weatherall, C. D. (2017), 'The Location Choice of Foreign Direct Investments: Empirical Evidence and Methodological Challenges', *Journal of World Business*, 52, 62-82.
- Procher (2011), 'Agglomeration Effects and the Location of FDI: Evidence from French First-Time Movers', *Annals of Regional Science*, 46.2, 295-312.
- Pusterla, F. and Resmini, L. (2007), 'Where Do Foreign Firms Locate in Transition Countries? An Empirical Investigation', *The Annals of Regional Science*, 41, 835-56.
- Rascuite, S. and Downward, P. (2017), 'Explaining Variability in the Investment Location

- Choices of MNEs: An Exploration of Country, Industry and Firm Effects', *International Business Review*, 26, 605-13.
- Resmini, L. (2000), 'The Determinants of Foreign Direct Investment in the CEECs: New Evidence from Sectoral Patterns' *Economics of Transition*, 8.3, 665-89.
- Serwicka, I., Jones, J. and Wren, C. (2014), 'The Motives for FDI Location in the 'Old' and 'New' Europe', *Regional Science Association Conference*, St Petersburg, Russia.
- Spies, J. (2010), 'Network and Border Effects: Where do Foreign Multinationals Locate in Germany?', *Regional Science and Urban Economics*, 40.1, 20-32.
- Stoian, C. and Filippaios, F. (2008), 'Dunning's Eclectic Paradigm: A Holistic, Yet Context Specific Framework for Analysing the Determinants of Outward FDI: Evidence from International Greek Investments', *International Business Review*, 17, 349-67.

Appendix: The Nested Logit Model – **Online Only**

The NLM specifies the probability of choosing country j as the product of the conditional probability of choosing j in nest S and the marginal probability of choosing nest S :

$$P_{ist}^S = \frac{\exp \beta x_{ist}}{\sum_{s \in S} \exp \beta x_{ist}} \times \frac{\exp(\lambda_S IV_S)}{\sum_{S \in J} \exp(\lambda_S IV_S)},$$

where the inclusive value $IV_S = \ln \left(\sum_{s \in S} \exp \beta x_{ist} \right)$ is the average profits from choosing nest S , and the dissimilarity parameter λ_S measures the degree of dissimilarity between the unobserved portion of profits within a nest (Spies, 2010). The correlation between the errors is $1 - \lambda_S$, so the countries in S are perfect substitutes if $\lambda_S = 0$, but the NLM collapses to the CLM if $\lambda_S = 1$. It is inconsistent with utility maximization if $\lambda_S < 0$, but it may be locally consistent if $\lambda_S > 1$ (Herriges and Kling, 1996; Pusterla and Resmini, 2007). It can be seen that nesting relaxes the IIA property since P_l / P_m will now also depends on the close substitute.

This is known as the RU2 model, which is implemented by *Stata*. If terms are included in IV_S at a nest level for EU accession events the regression does not converge. An alternative is a mixed-logit model in which the coefficients to have a random component (Belderbos *et al.*, 2014), but the density function is pre-specified and probabilities approximated by simulation.

Appendix Table A: Data and Variables – Online Only

No.	Variable	Description	Sign	Mean value	
				CEECs	EU15
<u>Market seeking (M):</u>					
1	Europe market potential	Gravity-weighted GDP of EU25 countries (log) – see expression (3).	+	3.5	3.6
2	National market size	GDP at constant prices, chain-linked volumes, reference year 2005 (at 2005 exchange rates), expressed in millions of Euro (log). [‡]	+	10.5	12.8
3	GDP growth rate	Growth rate of real GDP (national currency).	+	3.8	2.2
4	Population density	Number of people per kilometer squared (log).	+ / -	1.4	1.4
5	Motorway density	Measured by km of motorways per 1000 km ² (log).	+	1.5	2.8
<u>Resource seeking (R):</u>					
6	Tertiary education	Highest educational attainment of 25-64 year-olds at ISCED levels 5-6, %.	+	20.7	25.1
7	Secondary education	Highest educational attainment of 25-64 year-olds at ISCED levels 3-4, %.	+	63.7	42.0
8	Wage rate [†]	Hourly compensation cost in manufacturing at constant prices (log). [‡]	-	0.8	2.9
9	Labour market rigidity	Unemployed labour force aged 15+ and seeking employment, %.	-	9.8	7.4
10	Corporate tax rate	Adjusted highest statutory rate of corporate income tax, %.	-	23.3	31.7
<u>Integration terms (I):</u>					
11	EU membership	Dummy variable = 1 if CEEC is EU Member State; otherwise = 0.	+	0.6	1.0
12	Commitment to enlarge	Dummy variable = 1 for Council of Ministers commitment; otherwise = 0.	+	0.7	0.0
13	Economic liberalization	Real Effective Exchange Rate (REER) for basket of 36 countries. [‡]	-	96.8	99.4
14	Political liberalization	Political risk rating index of country, 0 to 100, where 100 = no risk.	+ / -	75.9	85.2
15	Trade liberalization	Value of exports plus imports expressed as a ratio to GDP.	-	96.2	66.7
<u>Controls (C):</u>					
16	Foreign specialization	Location quotient for the number of jobs in FDI projects in previous two years relative to EU25 as a whole, at the 2-digit industry level.	+	1.0	1.0
17	Domestic specialization [†]	Location quotient for employment relative to EU25 for 72 industries.	+	0.8	1.0
18	Industrial diversity	Jacobs term for inverse sum of absolute differences in country and EU25 industry shares based employment for 72 industries.	+	2.4	4.2
19	Market structure [†]	Herfindahl concentration index equal to sum of squares of the number of EIM FDI jobs in projects in previous two years at the 2-digit industry level.	-	0.5	0.4
20	Structural Funds	EU Structural policy payments by Member State (log). [‡]	+ / -	2.8	6.6
21	Market volatility	Absolute change in REER in previous year. [‡]	-	5.0	2.1
22	Single currency	Dummy variable = 1 if Euro is country's national currency.	+ / -	0.1	0.7
23	Physical areal size	Kilometer squared (log).	+	11.3	11.7

Notes: Measured for each country and year. Log = natural logs. Expected signs. [†] Missing cases dummied out, including wage data for some CEECs, but these dummies are not reported. [‡] Deflator = price index, 2005 = 100, based on Euro or ECU currency prior to this.

Sources: 1-5, 9, 13, 15, 20, 21 and 23: *Eurostat* (<https://ec.europa.eu/eurostat/data/>); 6, 7: *World Bank* (<https://data.worldbank.org/>); 8: ILS, *US Bureau of Labor Statistics*; 10: DG for Taxation, European Commission; 11-12: Christoffersen (2007); 14: International Country Risk Guide, *Political Risk Services Group*, commercial dataset; 16, 19: European Investment Monitor FDI dataset; 17-18: KLEMS employment data (<http://www.euklems.net/>); 22: *Europa* (https://europa.eu/european-union/about-eu/money/euro_en).

Appendix Table B: Correlation Matrix for Variables – **Online Only**

	Variable number [‡]																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	1.00																						
2	0.14*	1.00																					
3	-0.06*	-0.20*	1.00																				
4	0.56*	0.22*	-0.14*	1.00																			
5	0.58*	0.45*	-0.18*	0.35*	1.00																		
6	0.19*	0.04*	-0.07*	-0.23*	0.22*	1.00																	
7	0.27*	-0.17*	0.11*	-0.25*	-0.22*	-0.27*	1.00																
8	0.17*	0.83*	-0.18*	0.03*	0.39*	0.22*	-0.21*	1.00															
9	-0.29*	-0.03*	-0.03*	-0.23*	-0.32*	-0.09*	0.15*	-0.05*	1.00														
10	0.05*	0.43*	-0.09*	0.39*	0.26*	-0.15*	-0.32*	0.38*	0.07*	1.00													
11	0.19*	0.43*	-0.13*	0.53*	0.35*	0.23*	-0.28*	0.49*	-0.24*	-0.03*	1.00												
12	0.03*	-0.49*	0.16*	-0.18*	-0.36*	-0.18*	0.58*	-0.57*	0.17*	-0.62*	0.86*	1.00											
13	0.13*	0.09*	-0.21*	-0.04*	0.11*	0.15*	0.02*	0.11*	-0.15*	-0.33*	0.32*	0.59*	1.00										
14	0.31*	0.34*	-0.04*	0.12*	0.45*	0.15	-0.28*	0.52*	-0.51*	0.27*	-0.48*	0.42*	0.05*	1.00									
15	0.52*	-0.41*	0.17*	0.19*	0.01	0.07*	0.32*	-0.19*	-0.05*	-0.21*	0.42*	-0.10*	-0.07*	0.01*	1.00								
16	-0.01	-0.01	0.01	0.01	-0.01	-0.01	-0.01	-0.01	0.01	-0.01	-0.001	-0.01	-0.01	0.01*	0.01	1.00							
17	0.20*	0.17*	-0.04*	-0.03*	0.16*	0.07*	0.09*	0.24*	-0.02*	0.05*	-0.05*	0.17*	0.21*	0.08*	-0.06*	0.10*	1.00						
18	0.25*	0.67*	-0.40*	0.12*	0.45*	0.11*	-0.04*	0.69*	0.06*	0.31*	-0.33*	0.43*	0.35*	0.18*	-0.22*	0.01	0.30*	1.00					
19	-0.08*	-0.05*	0.01*	-0.13*	0.03*	-0.06*	0.10*	-0.11*	0.07*	-0.06*	0.10*	-0.01*	-0.05*	0.01*	0.05*	0.16*	-0.02*	-0.01*	1.00				
20	-0.02*	0.71*	-0.19*	0.05*	0.34*	0.14	-0.35*	0.67*	-0.06*	0.18*	-0.22*	0.78*	0.27*	0.46*	-0.15*	-0.01*	0.17*	0.58*	-0.01*	1.00			
21	-0.11*	-0.13*	-0.06*	-0.13*	-0.32*	-0.16*	0.32*	-0.22*	0.21*	-0.16*	0.30*	-0.18*	-0.35*	0.01*	0.07*	-0.01*	0.08*	-0.21*	0.07*	-0.29*	1.00		
22	0.14*	0.41*	-0.16*	0.17*	0.44*	0.16*	-0.41*	0.42*	-0.19*	0.22*	-0.44*	0.42*	0.41*	0.15*	-0.37*	-0.01	0.11*	0.42*	0.01*	0.48*	-0.12*	1.00	
23	-0.46*	0.60*	-0.10*	-0.23*	-0.30*	-0.08*	-0.08*	0.43*	0.31*	0.15*	-0.13*	-0.13*	-0.18*	0.01*	0.11*	-0.001	-0.04*	0.26*	-0.06*	0.39*	-0.54*	-0.001	1.00

Notes: ‡ Variable numbers given in Appendix Table A. * Significant at the 5% level.

Appendix Table C: Robustness Tests for Manufacturing Greenfield FDI - **Online**

Dependent variable: Location choice of manufacturing greenfield FDI projects						
Source / host countries:	EU25 source only ⁺		Excl. Southern EU15 host		Excl. Major EU15 host	
EU25 host countries:	CEECs	EU15	CEECs	EU15	CEECs	EU15
<u>Market seeking (M):</u>						
Europe market potential	3.425*** [***]	1.402***	4.038*** [***]	2.253***	3.865*** [***]	-5.909***
National market size	-0.226 [**]	-1.416***	0.506** [-]	0.194	0.064 [***]	-1.739***
GDP growth rate	0.022** [***]	-0.044***	0.024*** [-]	0.009	0.040*** [***]	0.105***
Population density	-1.560*** [***]	1.404***	-2.778*** [***]	1.161***	-2.231*** [***]	0.743*
Motorway density	0.612*** [**]	0.267***	0.608*** [***]	-0.930***	0.772*** [***]	1.881***
<u>Resource seeking (R):</u>						
Tertiary education	-0.058*** [***]	0.021***	-0.045*** [***]	0.052***	-0.072*** [***]	0.031***
Secondary education	-0.029* [-]	-0.006	-0.020 [***]	0.033***	-0.040*** [**]	-0.007
Wage rate	-0.995*** [**]	0.247	-0.486* [***]	1.559***	-0.697** [***]	3.986***
Labour market rigidity	-0.050*** [***]	-0.106***	-0.027*** [***]	-0.101***	-0.039*** [***]	-0.138***
Corporate tax rate	-0.044*** [-]	-0.033***	-0.052*** [***]	-0.035***	-0.041*** [***]	-0.070***
<u>Integration terms (I):</u>						
EU membership	0.175*	-	-0.131	-	0.079	-
Commitment to enlarge	0.292**	-	0.518***	-	-0.200*	-
Economic liberalization	0.022*** [-]	0.015***	-0.020*** [-]	-0.020***	-0.025*** [-]	-0.016**
Political liberalization	-0.023** [-]	-0.013**	-0.031*** [***]	0.026***	-0.031*** [***]	-0.060***
Trade liberalization	-0.007** [***]	0.003	0.001 [**]	0.006***	-0.004* [***]	0.024***
<u>Controls (C):</u>						
Market volatility	0.003 [-]	-0.003	-0.001 [**]	-0.021***	0.004 [-]	0.016
Single currency	0.691*** [***]	-0.336***	0.470*** [***]	-0.142**	0.348** [***]	-0.204***
Foreign specialization	0.087*** [-]	0.096***	0.099*** [**]	0.130***	0.087*** [-]	0.050**
Domestic specialization	0.014 [**]	0.150***	0.022 [***]	0.136***	0.048 [**]	0.124***
Industrial diversity	0.015 [-]	0.007	0.067* [-]	0.067***	-0.066 [-]	-0.071**
Market structure	-0.711*** [-]	-0.658***	-0.871*** [-]	-0.717***	-0.898*** [-]	-0.802***
Structural Funds	-0.078*** [***]	0.231***	-0.070*** [-]	-0.061	-0.066*** [***]	0.121**
Areal size	1.690*** [-]	2.159***	1.489*** [***]	1.041*	1.659*** [***]	0.983***
CEEC constant term	5.435	-	15.354	-	-29.602***	-
Log-likelihood	-14,444.9		-25,026.0		-16,963.0	
Wald statistic	3,820.9***		9,227.5***		3,680.0***	
N observations (i projects)	130,925 (5,237)		249,100 (9,964)		152,725 (6,109)	

Notes: CLM regression of equation (2) with (1). The first regression is for ultimate owner of FDI originating from EU25 only. The last two regressions include all countries in the choice set but exclude the following hosts from the estimates to not bias the estimates: Southern EU15 = Greece, Italy, Portugal and Spain; and Major EU15 = France, Germany and UK. ⁺ Joint ventures excluded where a partner is outside the CEECs or the EU15 respectively. See notes to Table 2.

Appendix Table D: Robustness Tests for Brownfield FDI and EU Enlargement – **Online Only**

Dependent variable:	Location choice of brownfield FDI projects				Location choice of greenfield FDI projects			
Function / Sector:	Production function				Manufacturing			
Efficiency motive:	Expansion		Co-location		Pre-EU	Post-EU	Pre-EU	Post-EU
EU25 host countries:	CEECs	EU15	CEECs	EU15	CEECs		EU15	
<u>Market seeking (M):</u>								
Europe market potential	3.576*** [-]	2.411***	1.487 [-]	0.800***	7.053***	4.485*** [**]	0.901***	1.156*** [**]
National market size	1.213*** [-]	0.474	0.741 [-]	0.848	0.113	-0.878*** [***]	-0.328	-0.189 [***]
GDP growth rate	-0.007 [***]	0.077***	0.034 [-]	-0.034	0.008	0.012 [-]	0.054***	-0.043*** [***]
Population density	-3.686*** [***]	0.009	-1.866 [-]	-0.476	-4.632***	-1.866 [***]	0.806***	0.665** [*]
Motorway density	0.880*** [***]	-0.073	0.410 [-]	0.255	0.880***	0.868*** [-]	0.067	0.359*** [***]
<u>Resource seeking (R):</u>								
Tertiary education	-0.093*** [***]	0.003	-0.019 [-]	0.050***	-0.104***	-0.079*** [-]	0.028***	0.050*** [**]
Secondary education	-0.081*** [***]	-0.013***	-0.009 [-]	0.034***	-0.078***	-0.052** [-]	-0.001	0.014*** [**]
Wage rate	0.096 [***]	-1.568***	1.982** [***]	-1.267	-0.221	-1.396*** [***]	-0.056	-0.369 [-]
Labour market rigidity	-0.003 [-]	0.012	0.022 [-]	0.031	-0.089***	-0.068*** [-]	-0.098***	-0.012 [***]
Corporate tax rate	-0.030*** [-]	-0.021***	-0.047*** [-]	-0.033***	-0.060***	-0.016* [***]	-0.022***	-0.065*** [***]
<u>Integration terms (I):</u>								
EU membership	0.433***	-	0.185	-	0.089		-	
Commitment to enlarge	-0.147	-	0.863***	-	3.738*		-	
Year 2004 onwards	-	-	-	-	-		-2.500***	
Log-likelihood	-17,547.4				-29,318.8			
Wald statistic	8,211***				9,556***			
N observations (i projects)	179,450 (7,178)				275,475 (11,019)			

Notes: First regression repeats estimation in Table 4 for projects in production only, and second regression in Table 5 for manufacturing projects only.